REMARKS

Claims 1-5 are pending in the present application and are rejected. Claims 1, 2 and 5 are herein amended. New claims 6-15 are added herein. No new matter has been added.

Priority Document

Applicants note that on the Office Action summary sheet, none of boxes 12, 12(a) and 12(a)(3) are checked. However, Applicants note that the USPTO has a certified copy of the priority document on the PAIR system. In particular, the certified copy is pages 18-34 of the document "Documents submitted with 371 Applications" dated May 30, 2008. Therefore, Applicants respectfully request confirmation of receipt of this certified copy of the priority document by checking boxes 12, 12(a) and 12(a)(3) in the next Office communication.

Applicants' Response to Claim Rejections under 35 U.S.C. §112

Claim 5 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is the position of the Office Action that the term "processed with dirt-proof processing" is not clearly defined. In response, Applicants herein amend claim 5 to provide clarification. In particular, claim 5 now recites that "said sign body further comprises a transparent dirt-proof layer on said sign surface." Applicants respectfully submit that this is supported at least by

Figure 2 and the corresponding text. Applicants also herein amend claims 1 and 2 for clarity. Favorable reconsideration is respectfully requested.

Applicants' Response to Claim Rejections under 35 U.S.C. §103

Claims 1-3 are rejected under 35 U.S.C. §103(a) as being unpatentable over Tanaka et al. (U.S. Patent No. 5,759,671) in view of Watanabe et al. (U.S. Patent No. 5,818,640).

It is the position of the Office Action that Tanaka discloses the embodiments as claimed, with the exception of teaching the specific angle ranges or the linear dimension ratio ranges recited in the claims. The Office Action relies on Watanabe to provide this teaching.

Tanaka is directed at an ultraviolet luminescent retroreflective sheeting. As illustrated in Figures 1 and 2, the sheeting includes capsules 8 of retroreflective region 6 and UV luminescent layer 5 of UV luminescent region 7. This sheeting is then formed into display part 12, as illustrated in Figure 8. Display part 12 is contrasted with background 13, and both parts are illuminated by UV radiating lamps 14.

Watanabe is directed at a sign illumination system and method. As illustrated in Figure 1, a sign 10 is disposed above first lane T1 and second lane T2 at a distance X from the ground. The dimensions of the sign are width W and height Y. An illumination source 20 is disposed at a height H above the ground and at a distance L to the sign 10. The illumination source 20 is disposed on the shoulder E, to the left of the sign 10, the lanes T1 and T2 and sideway S1. The illumination source 20 includes a floodlight 20a, the light rays of which have incident angles of θ_1, θ_2, θ_3 and θ_4. Each of these incident angles is between 0° and 30°, but preferably between 0°

and 15°. See column 3, lines 49-53. Additionally, the incident angle is the same over the entire sign. See column 3, lines 49-53 and column 8, lines 24-26 and 60-62. Further, the floodlight is arranged at a position of $(100-L)X/100 < H < (X+Y)(300-L)/300$. Column 4, lines 7-18.

As to the specific angle ranges and the linear dimension ratio ranges, the Office Action states that Watanabe "teaches the particular importance of the position and angle of the light source relative to the display surface as it effects the illumination of the sign surface." Therefore, the Office Action alleges that it would have been obvious to optimize these values.

Applicants first discuss claim 1. In response to the rejection, Applicants first respectfully submit that neither Tanaka nor Watanabe discloses or suggests that the incidence angle is a results-effective variable. "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also MPEP 2144.05. While Watanabe discusses incident angles, it does not recognize that the incidence angle is a results-effective variable. In Example 1, Watanabe only recognizes that the position of the floodlight is a results effective variable. See column 7, lines 3-9 and Table 1. Therefore, Applicants respectfully submit that it would not have been obvious to arrive at the claimed incidence angles based on the cited art.

Applicants first respectfully note that neither of the cited references disclose or suggest different incident angles from an irradiation device. Claim 1 requires a maximum incidence angle of greater than 30° and less than 70° and a minimum incident angle of greater than 0° and

less than 30°. As such, the maximum and minimum incident angles are different. Even if, *arguendo*, the cited art did recognize that incidence angle is a results-effective variable, the only thing that could be recognized as a results-effective variable would be a common incidence angle "for substantially all of said sign face." See column 8, lines 25-26 of Watanabe. The cited art does not recognize that individual incident angles are a results-effective variable. Therefore, Applicants respectfully submit that it would not have been obvious to modify the cited art to arrive at the embodiment of claim 1.

As to claim 2, this claim requires a specific relationship between the distance between the irradiation device and the sign (X) and a sum of a distance between the irradiation source and a side end of the sign surface closer to the irradiation device along a surface direction of the sign surface (Y1) and a width of the sign surface (W) (Y1+W=M). See Figure 1. As noted above, "a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." The Office Action alleges that the cited art discloses that Watanabe discloses the "particular importance" of these values.

In response, Applicants respectfully submit that Watanabe does not factor in the distance between of the irradiation device and the far edge of the sign (Y1+W=M in Figure 1). As noted above, Watanabe discloses the following formula:

$$(100\text{-}L)X/100 < H < (X+Y)(300\text{-}L)/300$$

L is the distance to the sign, H is the height of the illumination source, X is the height of the bottom edge of the sign and Y is the height of the sign itself. See Figure 1 of Watanabe.

Although Figure 1 of Watanabe discloses a width W, this is not considered as a results-effective variable in the placement of the illumination source. Furthermore, the distance between the floodlight and the side of the sign (which would include sideway S1) is not considered as a results-effective variable. Therefore, Applicants respectfully submit that even if, *arguendo*, Watanabe discusses the distance L (equivalent to distance X in the present embodiments) and that a ratio including this distance L is a results-effective variable, Watanabe does not disclose or suggest that a ratio which *also* includes the sum of the width of the sign (W) and the distance between the irradiation device and the side of the sign (Y1) is a results-effective variable. Therefore, Applicants respectfully submit that it would not have been obvious to modify the cited art to arrive at the embodiment of claim 2.

As to claim 3, Applicants first respectfully submit that this claim is patentable at least due to its dependency on claims 1 and 2, which Applicants submit are patentable for at least the above reasons. Additionally, Applicants respectfully submit that the combination of cited art does not disclose or suggest the subject matter of claim 3. The Office Action states that "Tanaka teaches a plurality of UV emitting elements 14, having different irradiation angles relative to the sign surface." However, Applicants respectfully submit that although Tanaka does disclose multiple UV radiating lamps 14, there is no disclosure or suggestion in Tanaka that these UV radiating lamps have *different* irradiation angles. Tanaka discusses the UV radiating lamps 14 and Figure 8 at column 13, lines 6-57, but makes no mention of irradiation angles being "different from each other." Rather, Figure 8 shows that the irradiation angles from the UV radiating lamps 14 are the same. Therefore, Applicants respectfully submit that the combination

of cited art also does not disclose or suggest the embodiment of claim 3 for this additional reason. Favorable reconsideration is respectfully requested.

Claim 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over Tanaka in view of Watanabe and further in view of Ward et al. (U.S. Patent No. 2,015,170).

It is the position of the Office Action that the combination of Tanaka and Watanabe discloses the embodiments as claimed, with the exception of teaching quartz tubes. The Office Action relies on Ward to provide this teaching.

As to claim 4, Applicants respectfully submit that this claim is patentable at least due to its dependency on claims 1 and 2, which Applicants submit are patentable for at least the above reasons. Favorable reconsideration is respectfully requested.

Claim 5 is rejected under 35 U.S.C. §103(a) as being unpatentable over Tanaka in view of Watanabe and further in view of Kochanowski et al. (U.S. Patent No. 6,029,382).

It is the position of the Office Action that the combination of Tanaka and Watanabe discloses the embodiments as claimed, with the exception of teaching "dirt-proof processing." The Office Action relies on Kochanowski to provide this teaching.

As to claim 5, Applicants respectfully submit that this claim is patentable at least due to its dependency on claims 1 and 2, which Applicant submits are patentable for at least the above reasons. Favorable reconsideration is respectfully requested.

New Claims

In addition to the above, Applicant herein add new claims 6-10. Applicants respectfully submit that these claims are patentable for similar reasons as claims 1-5, discussed above, and the following additional reason.

As discussed in the specification, $30° < \theta_1 < 70°$ and $0° < \theta_2 < 30°$. Furthermore, as illustrated in Figure 1, the irradiation device 12 is to the side of the sign body 11 and the roadway S. Furthermore, θ_1 is the incident angle at the top right corner of the sign, and therefore is at the top corner of the sign body 11 farthest away from the irradiation device 12. Additionally, θ_1 is the incident angle at the bottom left corner of the sign, and therefore is at the bottom corner of the sign body 11 nearest to the irradiation device 12. New claim 6 recites this configuration. The combination of cited art does not disclose or suggest such a configuration. Favorable consideration is respectfully requested.

Furthermore, Applicants herein add new claims 11-15. Applicants respectfully submit that these claims are patentable for similar reasons as claims 1-5, discussed above, and the following additional reason.

These claims now explicitly recite that the irradiation device includes first and second irradiation units. Of course, this does not preclude three or more irradiation units. New claim 11 recites that the maximum incident angle of the ultraviolet rays is the output of the first irradiation unit and that the minimum incident angle of the ultraviolet rays is the output of the second irradiation unit. As a result of this, the ultraviolet rays are made more diffuse, and uniformity of the strength of the ultraviolet rays on the sign surface is achieved. Therefore, good symmetry can

be obtained, and the entire sign surface can be efficiently lit. As noted above with respect to claim 3, the combination of cited art does not disclose or suggest different irradiation angles from multiple irradiation units. In the cited art, the irradiation angles of multiple irradiation units are the same. Favorable consideration is respectfully requested.

For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

If the Examiner deems that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned attorney.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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